REMARKS / ARGUMENTS

In complete response to the outstanding Official Action of September 30, 2004, on the above-identified application, reconsideration is respectfully requested. Claims 1-44 remain in this application. Claims 1, 2, 5-12, 14-17, 19-36, and 39-42 are as originally filed. Claims 3, 4, 13, 18, 37, 38, 43, and 44 are currently amended.

Claim Rejections Under 35 U.S.C. § 112

Claims 3, 4, 13, 18, 37, 38, 43, and 44 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which the applicant regards as the invention. The Examiner notes that the term "optionally" in all of the above claims renders them pointless. These claims have been amended to remove the term "optionally", thereby rendering this rejection moot.

Claim Rejections Under 35 U.S.C. § 102

Claims 1-4, 9, 10, 14-18, 27, 28, 31, and 32 stand rejected under 35 U.S.C. § 102(b) as being anticipated by McKee '832.

With regard to independent claim 1, contrary to the examiner's statement that all elements are disclosed in McKee '832, a "dry ice product comprising ozone entrapped or physically absorbed on or within the product or both" is not disclosed, so the rejection is unsupported by the art and should be withdrawn.

As discussed at length below, McKee '832 teaches the combination of supercritical phase ozone with gas phase carbon dioxide. While in either the gas or subsequent liquid phase, the carbon dioxide is deodorized by the ozone.

Subsequent to this deoderization process, the disposition of the ozone with respect to the carbon dioxide is neither taught nor suggested.

With regard to independent claim 14, contrary to the examiner's statement that all elements are disclosed in McKee '832, "contacting a gaseous ozone stream with liquid carbon dioxide" is not disclosed, so the rejection is unsupported by the art and should be withdrawn.

McKee '832 teaches that the ozone will be generated at a pressure in excess of 1000 psi. This ozone is well above the critical pressure, and therefore would be in the supercritical phase, and therefore not a gas. McKee '832 also teaches that the ozone and the carbon dioxide are mixed "at a point between the compressor and the cooling tank in which the carbon dioxide gas becomes liquid." (page 2, lines 49-51, and the drawing). Therefore, McKee '832 teaches contacting supercritical phase ozone stream with gaseous phase carbon dioxide.

With regard to independent claim 28, contrary to the examiner's statement that all elements are disclosed in McKee '832, "contacting a gas stream containing having a pressure of at least 90 psig with dry ice" is not disclosed, so the rejection is unsupported by the art and should be withdrawn

As discussed above, McKee '832 teaches contacting supercritical phase ozone stream with gaseous phase carbon dioxide.

With regard to independent claim 31, contrary to the examiner's statement that all elements are disclosed in McKee '832, "placing a food product in the proximity of a dry ice solid containing entrapped or absorbed ozone" is not disclosed, so the rejection is unsupported by the art and should be withdrawn.

Since this rejection with regard to claims 1, 14, 28, and 31 are unsupported and should be withdrawn, this rejection with regard to claims 2-4, 9, 10, 15-18, 27, and 32 is also unsupported and should be withdrawn as they are dependent upon the above independent claims.

Applicants respectfully points out that with regard to that which McKee '832 *does* disclose, this reference is non-enabling. The critical pressure for oxygen is

734.1 psi. As noted above, McKee '832 requires the oxygen be pressurized to 1800 psi prior to introduction to the "ozone machine".

No ozone machine known to those skilled in the art can feasibly receive supercritical oxygen and generate ozone. One skilled in the art would know that current known commercial technology allows for pressures up to approximately 50 psi. Therefore, McKee '832 fails to teach the skilled artisan how to actually produce such high pressure, and inherently explosive, ozone so that it can be combined with the high pressure gas phase carbon dioxide.

Claim Rejections Under 35 U.S.C. § 103

Claims 5-8, 11-13, 19-24, 26 and 29-44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over McKee '832. The Examiner notes that McKee '832 "discloses the production of dry ice with entrained ozone." Applicants respectfully disagree with the Examiner's characterization of precisely what McKee '832 discloses.

McKee '832 discloses blending supercritical phase ozone with gas phase carbon dioxide, prior to a cooling step, during which time the ozone contacts and neutralizes any odorous materials present in the carbon dioxide. McKee '832 notes that:

- The quantity of these odorous materials present will be very small, "0.001 per cent or less." (page 1, line 26)
- The amount of ozone required will be a very small amount, "approximately 0.01 percent by weight." (page 1, line 75)
- Care must be taken to ensure that the ozone reaches the gas phase carbon dioxide before "material decomposition of the ozone takes place." (page 2, line 32 and 33)
- "the ozone apparently oxidizes some of the objectionable materials to form carbon dioxide and water." (page 1, lines 53-55)

This would lead one of skill in the art to reasonably conclude that virtually all the ozone that is involved is either decomposed or reacts with the objectionable materials, and that little if any of this ozone remains afterwards.

McKee '832 discloses that the dense phase ozone is blended with gas phase carbon dioxide, which is then cooled in a "cooling tank". At this point, McKee '832 teaches that "the carbon dioxide will liquefy.", (page 2, line 10) Nowhere is it stated that the ozone will liquefy. If the gaseous carbon dioxide is pressurized to approximately 1000 psi, the liquefication temperature required would be approximately 80 °F. At this pressure and temperature, ozone remains well into the supercritical region. One skilled in the art would recognize that there would be nothing disclosed in McKee '832 that would ensure that the supercritical ozone would necessarily remain in solution within the newly liquefied carbon dioxide.

In fact, McKee '832 discloses that such a condensing system has provisions for removing "inert" gases, which one presumes to mean "non-condensable" gases, since oxygen and ozone can hardly be considered "inert" by any ordinary meaning of the term. McKee '832 states that:

> "such inert gas will be present in such small amounts that it readily can be taken care of in the usual way along with other inert gases customarily present in such apparatus." (page 1, lines 104 – 109)

McKee '832 makes no mention of any ozone remaining in the solid carbon dioxide. Since the deodorization process, as discussed in the disclosure of McKee '832, requires a reaction, and further requires that the products of this reaction be removed from the carbon dioxide, it would be clear to one skilled in the art that this deodorization reaction must take place in either the gas or liquid carbon dioxide phase. Otherwise, the products of reaction would be trapped in the matrix of the solid carbon dioxide and would clearly represent unwanted contamination. So, it would be clear to one skilled in the art of dry ice production, that McKee '832

teaches or suggests that any ozone that was introduced into the system would have completed it's deodorization function and left solution prior to entering the "solid carbon dioxide machine."

One skilled in the art would recognize, from reviewing a Pressure/Enthalpy chart for carbon dioxide, that the liquid carbon dioxide pressure of approximately 1000 psi, in isenthalpic expansion down to 14.7 psi, would result in approximately 75% of the carbon dioxide remaining in the vapor phase, while only approximately 25% of the carbon dioxide would end up in solid phase. This would be in striking contrast to the approximately 50% conversion efficiency seen by most modern commercial dry ice equipment. Therefore, the skilled artisan would expect that at most of whatever residual ozone remained in the liquid carbon dioxide would be either vented or recycled along with approximately three-quarters of the gas phase carbon dioxide. This skilled artisan would almost certainly recognize that this ozone is unstable, and would expect it to decompose prior to this cycle repeating itself.

Therefore, one of ordinary skill in the art would find that McKee '832 neither teaches nor suggests the present invention.

Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over McKee '832 in view of Kiyonaga et al '918. As discussed above McKee '832 neither teaches nor suggest the present invention, and Kiyonaga et al '918 fails to remedy these deficiencies.

CONCLUSION

Accordingly, it is believed that the present application now stands in condition for allowance. Early notice to this effect is earnestly solicited. Should the examiner believe a telephone call would expedite the prosecution of the application, he is invited to call the undersigned attorney at the number listed below.

Respectfully submitted,

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CERTIFICATE OF MAILING UNDER 37 CFR 1.8(a)

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 7th day of February, 2005.

Stacy Forte